

UNIVERSITY OF ILLINOIS
DEPARTMENT OF BACTERIOLOGY
362 NOYES LABORATORY OF CHEMISTRY
URBANA

September 21, 1954

Doctor J. Lederberg
Department of Genetics
University of Wisconsin
Madison, Wisconsin

Dear Josh:

I am enclosing a copy of a short report of a talk recently given to the phage meeting at Cold Spring Harbor.

There are two bits of information not included in the table:

- (1) One of the clones selected for L^+ contains the markers T^+ and A_z^R i.e. a triple transduction. When the original colony is streaked and tested, however, no colony contains all three markers. Out of 19 tested, 11 are $T^+L^+A_z^S$, 3 are $T^-L^+A_z^R$, 4 are $T^-L^+A_z^S$, 1 is $T^-L^-A_z^S$.
- (2) When colonies selected for L^+ are tested before streaking, about 50% are A_z^R . Those that are A_z^R , when streaked, then give about two-thirds A_z^R and one-third A_z^S .

Seymour tells me that you will be here this fall. I am looking forward to seeing you.

Sincerely,

Ed

Edwin S. Lennox

Transduction in strains of *E. coli* - E. S. Lennex* Department of Bacteriology
University of Illinois, Urbana, Illinois

The temperate coli-phage P1 can transduce a wide variety of characters in several strains of *E. coli*. With P1 grown on strain Sh of *Shigella dysenteriae*, the following transductions have been carried out:

- E. coli* C arginine requiring transduced to arginine independence
- " *coli* C tryptophane requiring transduced to tryptophane independence
- " *coli* C galactose non-fermenting transduced to galactose fermenting
- E. coli* B streptomycin dependent transduced to streptomycin independence
- E. coli* W pyrimidine requiring transduced to pyrimidine independence

On strain K-12, with phage grown on a prototrophic and azide resistant K-12, the range of characters was extended to the requirements for methionine, leucine, threonine and to azide resistance.

Unlinked characters were not found to be transduced together, i.e., in a transduction using methionine independence as a selective marker, the transduced clones retained the xylose and maltose characters of the acceptor cells (200 colonies tested). Linked characters can be transduced together. The table displays cumulative data from the transduction of a T^- (threonine) L^- (leucine) B_1^- lactose⁻ azide sensitive strain of K-12 (W-677) by phage grown on a $T^+ L^+ lac^+ A_z^R$ strain of K-12 (a derivative of 58-161). B_1 is not used as a selective marker.

Selective Marker	Frequency of transduction of the selective marker per P1 absorbed	# of colonies transduced for the selective marker also transduced for the non selective marker				# colonies Tested
		T^+	L^+	lac^+	A_z^R	
$T^+ L^+$	3×10^{-7}	-	-	0	0	450
T^+	1×10^{-5}	-	5	0	0	200
L^+	3×10^{-5}	4	-	0	71	150

In this experiment on W-677, the frequency of lysogenization in the transduced clones is about 20%, independent of the selective marker.

* Fellow of the National Foundation for Infantile Paralysis.